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ABSTRACT

This booklet is written for the general reader who wants to understand important trends in vocational education and training. It aims to give the reader an understanding of industry restructuring by answering three key questions: What is industry restructuring? Why restructure? How is industry restructuring achieved? The first part describes industry and award restructuring as well as restructuring at the industry level and at the enterprise level. The second part discusses the external and internal forces that cause restructuring within enterprises. The third part describes a strategic approach to restructuring and then considers each of the six elements of operational strategy that are involved in the current restructuring process: new technology, change to work organization, job redesign, award restructuring, definition of skill-related career paths, and education and training. A number of case studies are referred to in the discussion in each of the three parts. The final section of the booklet provides an annotated list of 36 publications for further reading. (YLB)

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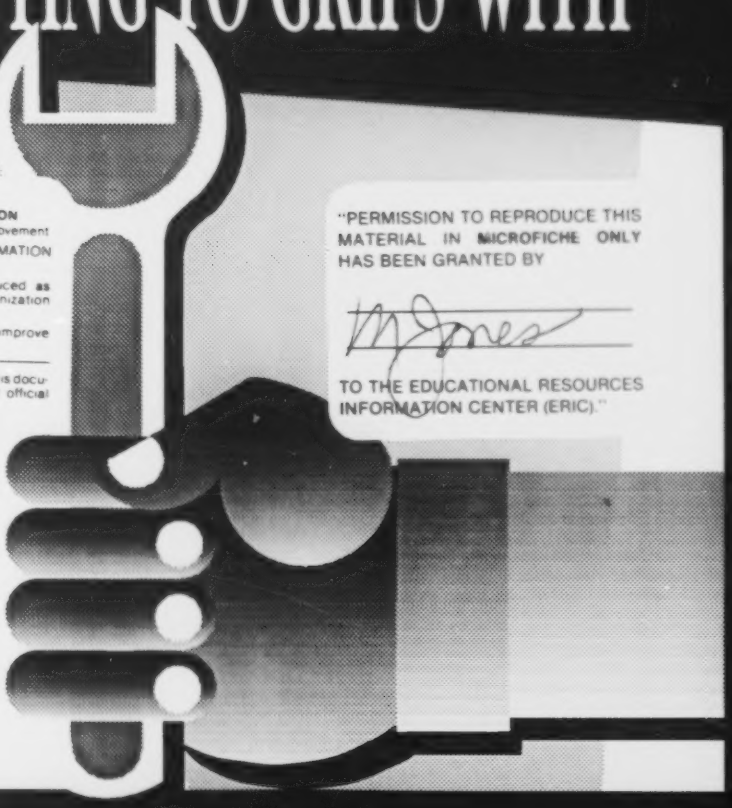

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INDUSTRY RESTRUCTURING

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GETTING TO GRIPS WITH INDUSTRY RESTRUCTURING

Geoff Hayton

ABOUT THE SERIES

The "Getting to Grips With . . ." series has been written for the general reader who wants to understand important trends in vocational education and training.

Each booklet is in two parts. The first part comprises a description of the subject matter in a manner which is intended to be clear to any interested layperson. The second part gives an annotated list of publications for those who want to read further.

Other titles in the series include: *Getting to Grips With Skills Audits* and *Getting to Grips With Competency-based Training and Assessment.*

The Series Editor is Dr. William Hall, Executive Director, TAFE National Centre for Research and Development. The Series Designer is Bain Middleton. Photographs were provided by Advertiser Newspapers Ltd, CALS Media Unit of the Adelaide College of TAFE, and Alcoa of Australia Ltd.

ABOUT THIS BOOKLET

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INTRODUCTION

Industry restructuring is a topic frequently discussed in Australia today. While many people have a general idea of what it is, few understand its importance and how it will be achieved. Also, industry restructuring is often confused with award restructuring. Yet all people in our workforce, especially managers and union representatives, will need a good understanding of the process of industry restructuring if it is to be achieved successfully. Australia's economic future depends on the success of industry restructuring.

This booklet aims to give the reader an understanding of industry restructuring by answering three key questions:

* What is industry restructuring?
* Why restructure?
* How is industry restructuring achieved?

A number of case studies will be referred to in the discussion of each question.

WHAT IS INDUSTRY RESTRUCTURING?

Put simply, industry restructuring means considerable change to industry. But industry has always gone through changes, both in Australia and overseas. So what is special about the current industry restructuring?

Restructuring literally means "to give new form or organisation to". So current industry restructuring involves radical change in which industries and establishments attempt to move to a new form of organising and a new way of doing work. This is the crucial aspect, and is part of our definition:

> Industry restructuring is a process for the achievement of significantly higher levels of productivity, quality and flexibility in enterprises. The process involves the introduction of new forms of work organisation within individual enterprises and across whole industries. It also involves some or all of the following:
>
> * new technology;
> * job redesign;
> * restructuring of industrial awards;
> * a higher skilled workforce through training and career paths.

The term *industry restructuring* is often used to refer to an industry restructuring package negotiated between the government, employer bodies and unions. Examples

include the Vehicle Industry Plan (see box on page 6), the Textiles, Clothing and Footwear Industries Plan, and the Waterfront Industry Reform Agreement.

Our definition emphasises the range of changes needed at the workplace to achieve competitiveness. A combination of these changes is sometimes called *workplace restructuring*. While the term *industry restructuring* is used by others in a wide variety of ways, our definition and the content of this booklet, have a clear focus on workplace restructuring. Another currently used term which overlaps industry restructuring is *microeconomic reform*.

The changes occurring as industries restructure vary from industry to industry, but some features are common. One of the important features in common is a highly skilled workforce brought about through continuing vocational education and training.

Service organisations are placing more emphasis on identifying customer requirements. The trend is towards higher standards of customer service, and this requires skilled operatives.

In the manufacturing industries we are seeing a radically new approach to manufacturing being introduced here and overseas. The trend is away from the mass production approach (called 'Fordism' after Henry Ford, who introduced the assembly line and mass marketing to car making in the USA) to an approach called *integrated manufacturing* (based on computer technology, improved communication and a highly skilled workforce). This will be described on pages 30 to 40.

Whenever change of such scope is attempted, the process is usually time-consuming and may be painful to those involved (e.g. creating anxiety, fear of change, industrial disputation, temporary reduction in productivity). To achieve success, some key people need to champion the change resolutely. Such people need a clear strategic vision of what the restructuring should achieve in the medium- to long-term. By means of a consultative approach they need to win the support of all involved.

Industry restructuring and award restructuring: partners in change?

Award restructuring is just one part of the broader process of industry restructuring. The two are not synonymous. If we restrict ourselves to award restructuring without industry restructuring, then little will be achieved.

An award sets out the terms and conditions of employment. It is an agreement between employers and unions or, where there is a dispute, it is a judgement handed down by the Industrial Relations Commission (for Federal awards) or by State Industrial Commissions (for State awards).

Award restructuring is the substantial changing of awards (Federal or State) and can include the following:

* the removal of obsolete classifications;
* a reduction in the number of classifications;
* the broad-banding of a range of jobs under appropriate single classifications; and

* the establishment of links between training, skills and wages, which results in a career path enabling a worker under the award to progress to the highest paid job classification.

Award restructuring is described in more detail on pages 40 to 46.

Industry restructuring is the means of achieving goals of greatly improved productivity and greater competitiveness in price, quality and service. Industry restructuring involves changes to work organisation, job redesign, career-long training, career paths, multi-skilling and award restructuring. The mix will be different for each industry and for each enterprise, but the goal of greater competitiveness remains the same.

Industry restructuring may be viewed at two levels:

* restructuring at the industry level;

* restructuring at the enterprise level.

However, in the long run the crucial element is restructuring within enterprises. Restructuring at both levels will now be described.

Restructuring at the industry level

Restructuring at the industry level involves setting goals for the industry and putting in place an industry strategy or framework for achieving the goals.

Ideally, goal setting and strategic planning should involve a process of discussion and consensus among government, employer bodies and unions.

As stated earlier, the broad goal is greater competitiveness for Australian industry. The strategy may involve:

* deregulation;
* a phased reduction of tariffs;
* changes to government taxes and charges;
* changes to government-funded vocational education and training;
* changes to industry-wide industrial awards;
* more industry-based and industry-funded training.

All of these could contribute to a competitive strategy for specific industries. Government, employer bodies and unions should take part in developing an overall strategy. However, their roles vary from industry to industry, as illustrated in the examples in the following box.

Examples of restructuring at the industry level

1. *METALS: In the mid-1980s there was agreement among the major industrial parties (Metal Trades Industry Association and Metal Trades Federation of Unions) that the survival of Australia's metal industries was threatened by lack of international competitiveness. There was agreement that higher productivity should be sought by the application of new technology along with major changes in work organisation. It was recognised that this required substantial changes to the*

national metal industries award and a better system of skill enhancement. In March, 1990 a new national award was set and supporting changes to training and career paths were being pursued.

2. *CAR MANUFACTURING: The Commonwealth Government's Vehicle Industry Plan (announced in May, 1984 and modified in 1988) was established as part of a long-term strategy for the industry. It was designed to restructure the industry and to encourage Australian car manufacturers to compete effectively against importers and to open up potentially lucrative export markets. The plan included the gradual lowering of restrictions on imported vehicles from 100% tariff in 1985 to 35% in 1992. To improve economies of scale, the number of available models was to be cut from 13 to 6 (or less). In conjunction with these activities, $150 million were to be allocated for Australian vehicle research and design and the phasing in of the retraining program called the Labour Adjustment Training Assistance scheme (LATA) to assist displaced car industry employees.*

   There is now some debate on the current pace of reform and future tariffs after 1992. Some say the current tariff reductions should have been greater, and assert that further tariff reductions are required after 1992.

CAR MANUFACTURING IN AUSTRALIA

Restructuring at the enterprise level

Industry plans, government policies and new industry awards are pointless if changes do not occur in enterprises. An enterprise may be described as any definable group of people with physical and financial resources to provide a product or service to customers. An enterprise may be in one location only, or in several locations, and may be private or public.

The success of industry restructuring depends on restructuring within enterprises both small and large. The challenge exists for both the management and employees of each enterprise.

The thrust of restructuring is the same for each enterprise. The broad goal is competitiveness in local, national and world markets. The strategy usually involves growth (or survival) by means of some combination of new technology, changes to work organisation, award restructuring and training.

But the approach will be different for each enterprise. Each enterprise has its own place in the market, capital equipment and organisational 'culture'. Also, each enterprise depends heavily on the knowledge, skills and attitudes of its people at all levels in the organisation. Each enterprise is unique, so each is likely to select a different strategy; this is clear in the case studies below.

Some enterprises in Australia began significant restructuring before awards were restructured. In such cases the enterprise saw award restructuring as a logical step in a series of steps that preceded and followed award

restructuring. Containers Packaging (Rocklea) is an example of this (see box). Other enterprises on the other hand, may see award restructuring as a first step in restructuring the enterprise.

Containers Packaging (Rocklea, Qld)

The Rocklea site of Containers Packaging currently produces two- and three-piece seamless cans, and includes a sophisticated six-colour decorating plant. In the mid-1970s the factory employed 180 people. At that time the factory was suffering from low productivity and poor relations between management and the factory floor workers. In 1978 a new factory management was appointed to conduct an 'internal restructuring program'. A major thrust of the changes implemented was the improvement of employee relations and encouragement of consultation. Anomalies were addressed, and communication improved.

The key elements of restructuring at Rocklea were:

- *changes to work organisation;*
- *introduction of new technology;*
- *lifting of the skills of all employees.*

Work was reorganised so that the information flow along the production line and between production and management was improved. A more integrated manufacturing operation resulted. The early part of the internal restructuring process involved conducting an organisational audit, implementation of wage structure bands and career paths, and provision of in-house supervisor and middle-management training. Further restructuring, through the 1980s, involved the introduction of sophisticated new production equipment in three phases, and the development of the skills of the factory floor workers. Operators received structured on-the-job training. More broadly skilled production fitters and non-trade maintainers are presently being developed. A TAFE college is assisting with in-house training and accreditation of on-the-job training.

Currently the factory produces 560 million cans per year (over three times the volume of the mid-1970s) and employs 380 people. The company's competitiveness has improved greatly. The management and staff view the current award restructuring as a consolidation of changes already in train at Rocklea.

Also, enterprise restructuring may be based on one of two approaches to award restructuring:

* industry-wide awards;

* enterprise awards.

There is much argument about the merits of these two approaches, and these will be described on pages 43 to 46. Regardless of which approach is chosen, most of the other elements of restructuring, such as change to work organisation and job redesign will be the same. Alcoa is an example of a plant which tackled work re-organisation and job redesign before award restructuring (see box).

Alcoa of Australia Ltd (Point Henry and Anglesea, Victoria)

As a part of its integrated Australian operations, Alcoa of Australia Limited operates a major aluminium smelter and semi-fabricating plant at Point Henry and a 150mw power station at Anglesea in Victoria. The Point Henry Plant currently employs around 1,500 people.

A series of wide-ranging and detailed reviews of its operations was begun by Alcoa's Point Henry management in 1984, a key objective being the improvement of international competitiveness. The reviews were prompted by a decline in the world market for aluminium; a market which saw a fall in the corporation's net profit from $102 million in 1981 to $44 million in 1984.

In 1986 field maintenance responsibilities for both mechanical and electrical maintenance were integrated with the organisational structure of each operating department. This represented the start of a process to devolve more responsibility for the overall control of maintenance to all employees within each department.

In 1988-89, new classification structures for trades employees were negotiated at Point Henry, with final agreement and ratification by the Industrial Relations Commission in July, 1989. Higher classifications for tradespeople, linked with training, were provided in the awards. Much of the training was provided by Gotec Limited of the Gordon Technical College.

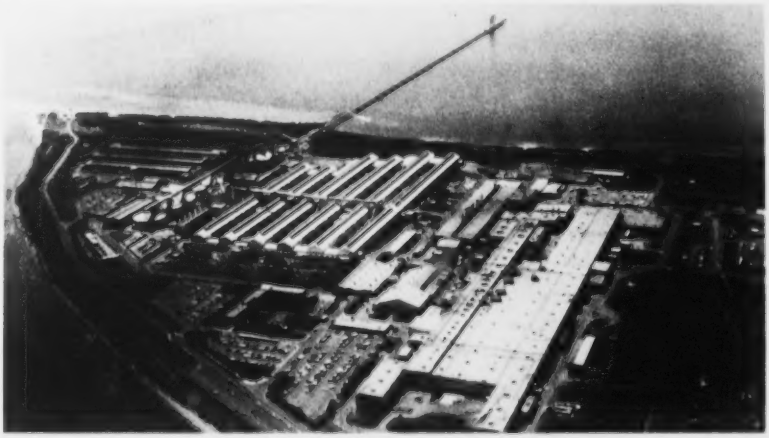
Some key skills covered in the training modules for tradespeople included:

- *integrated team concept of maintenance;*
- *communication and problem-solving;*
- *monitoring and prevention of faults through planning;*
- *recording and reporting;*
- *initiating and decision-making skills.*

The management at Alcoa believe that the crucial changes that helped the company to become more competitive in recent years are:

- *job redesign through consultation;*
- *training to support job redesign;*
- *cooperation between unions and management becoming the norm for the company.*

The changes have been widely accepted and both management and employees at Point Henry and Anglesea are optimistic about the future.



ALCOA OF AUSTRALIA LTD. AT POINT HENRY

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WHY RESTRUCTURE?

It will be evident that industry restructuring is a difficult and time-consuming process, so why bother? An enterprise may be achieving satisfactory levels of turnover and profit, so why should it restructure?

There are some good reasons why enterprises should restructure. We shall summarise these as external forces and internal forces. Both forces are now described.

External Forces

There are two main external forces which are causing restructuring within enterprises:

* greater competition in world markets;

* sophistication of markets.

Greater competition in world markets means that it is harder for Australian companies to sell their products or services overseas. So new export opportunities are more difficult to find, and maintaining existing exports is becoming harder.

It also means that Australian companies are finding it harder to maintain our local (Australian) market share and to find new markets because of competition from imports.

Why is there greater competition?

The main reasons are:

* in the past few years many overseas countries (notably Japan, South Korea and Taiwan) have improved their productivity in manufacturing industries at a much faster rate than we have in Australia;

* more countries, including the newly industrialised countries such as South Korea and Thailand, have vigorously entered the international export market of manufactured goods;

* progressive reductions in import tariffs in Australia in recent years have exposed Australian companies to more competition in our domestic markets.

Strong competition in world markets is expected to continue. The 1992 changes planned for the European Community market structure will further increase competition in trade.

However, all is not entirely negative in light of this trading challenge. In Australia's favour it does have some competitive advantages over many other countries (e.g. an abundance of raw materials, political stability and a good education infrastructure).

Sophistication of markets means that companies that do not change with the market will find their market share collapsing. In the 1960s companies that were the most efficient in terms of producing goods and services at lowest cost were usually the most successful. In the 1990s however this will not necessarily guarantee success. Consumers are now seeking a combination of low cost,

high quality and high service in their product. The general trend has been away from markets where price is the main component of competitiveness to customer-oriented markets where price, quality, service and flexibility are equally important components.

Japan has capitalised on this trend, turning their quality weakness in the 1950s and 1960s into quality being their major strength in the 1970s and 1980s.

Service and flexibility include:

* the development of new products and services to closely match customer demands;

* fast responses to changes in demand;

* shorter and more reliable lead times from order to delivery;

* good after-sales service.

In other words, companies need to know exactly what customers want and to be able to deliver quickly a matching range of products or services. The case study in the following box illustrates this principle. The catch-cry should be: "get close to your customers".

Lounge chair manufacturing

A customer wants a lounge chair of a particular shape and covered with a particular fabric. The customer also wants the lowest price but with reasonable quality. The customer states that the order is not urgent but "it would be good if we could have the chair next week". One manufacturer offers a good range of chairs and fabrics but takes "up to six weeks" to deliver. The other manufacturer takes the order on the first day, manufactures on the second day, and delivers on the third day. This manufacturer is also able to offer an equivalent range of quality chairs and fabrics at similar prices. It is obvious which manufacturer has the competitive advantage. The interesting point is that both manufacturers take a total of one hour and 20 minutes of direct production time to manufacture the chair. The difference is in the <u>indirect</u> time (mainly waiting time between manufacturing operations).

LOUNGE CHAIR MANUFACTURING:
UPHOLSTERING STAGE

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It is expected that product or service innovation will become an increasingly important factor in competitiveness in the 1990s. Innovation includes:

* new products or services;

* modification of existing products or services;

* new applications of existing products or services.

Innovation also may refer to new ideas about processes or systems within the company. Innovation requires:

* creativity;

* championing of new ideas;

* correct allocation of resources;

* understanding of technology, competitors and markets;

* good management of projects;

* the appropriate business structure and culture;

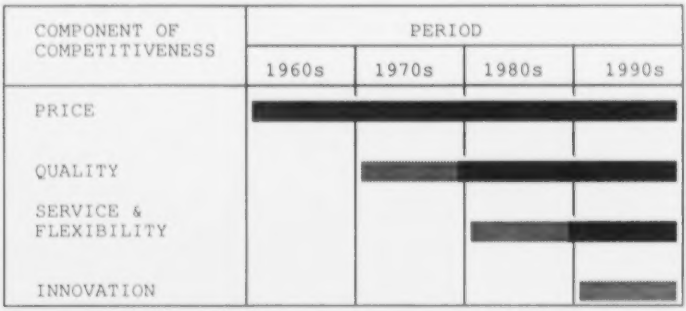
* a measured amount of risk-taking.

The customer is a good source of new product ideas, so spending more time with customers and researching their needs could improve quality, service and innovation.

By world standards Australia is a very creative and inventive country. But many of our good product ideas go to overseas manufacturers. Our weakness lies in getting

good product ideas to the market. As we have seen, this requires good business sense to back up the good ideas; it also requires financial backing, which some banks seem reluctant to provide.

Sophistication of markets includes four main components of competitiveness in the 1990s, with innovation becoming important. The trend from the 1960s to the 1990s is shown in the following chart.



NOTE: moderate component of competitiveness
substantial component of competitiveness

CHANGING COMPONENTS OF COMPETITIVENESS (from Hayton & Loveder, 1990)

The relative importance of each component of competitiveness will vary from product to product and service to service. However, these components are applicable in most industries and across most organisations - large and small, government or private.

Each company or organisation may choose a different competitive strategy, attempting to excel in one or two of these components while giving a lower priority to the

others. In the long-term, companies that restructure may have the ability to excel in all simultaneously.

Internal forces

For some enterprises and government organisations, the external forces described so far may not be present. In such cases, restructuring may be driven entirely by internal forces.

However, all enterprises, private and government, are affected indirectly by the external forces of increased international competition. For example, manufacturers who export have many costs related to the infrastructure services provided by government or semi-government authorities. Such services may include:

* electricity;
* gas;
* water;
* waste disposal;
* land transport (road, rail);
* customs and port facilities;
* sea and air transport.

There is a general push by the Commonwealth and State governments in Australia to reduce taxes and reduce the

cost of such services to help our industries become more competitive internationally.

For government departments and government-owned authorities, the initiative for restructuring (including 'corporatisation' and 'privatisation') may come from the government of the day. This pressure could be regarded as an internal force from the *owner* of the authority or government department.

Internal forces driving restructuring may come from the management of the organisation in order to achieve:

* more profit (short- medium- or long-term);
* growth;
* income generation;
* export generation and/or import replacement.

The push could come from the employees of the organisation, or unions representing the employees, to achieve:

* greater job satisfaction;
* greater job security;
* higher wages;
* defined career paths.

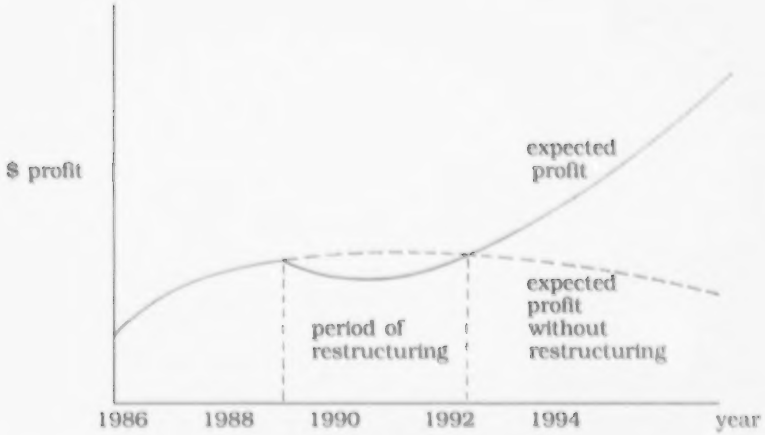
The 'quality of working life' movement of the 1960s and

1970s concentrated on the achievement of greater job satisfaction by the development of key principles of job redesign. These key principles will maintain their usefulness in many enterprises that restructure in the 1990s. The difference now is that the economic argument for their introduction is stronger and clearer than it was in the 1960s and 1970s.

Are the objectives of both management and employees compatible? As we shall see in the next section, the answer to this question depends on the approach taken to restructuring. If a superficial approach is taken, restructuring in an enterprise is little more than award restructuring with a simple trade-off of benefits between the employee and the employer. Some of the objectives of each group will be achieved in the short-term, but the long-term outcomes are much less certain.

If a strategic approach to restructuring is taken, some objectives may be sacrificed in the short-term during a planned program of change. However, in the long-term, most or all of the objectives of both groups should be achieved.

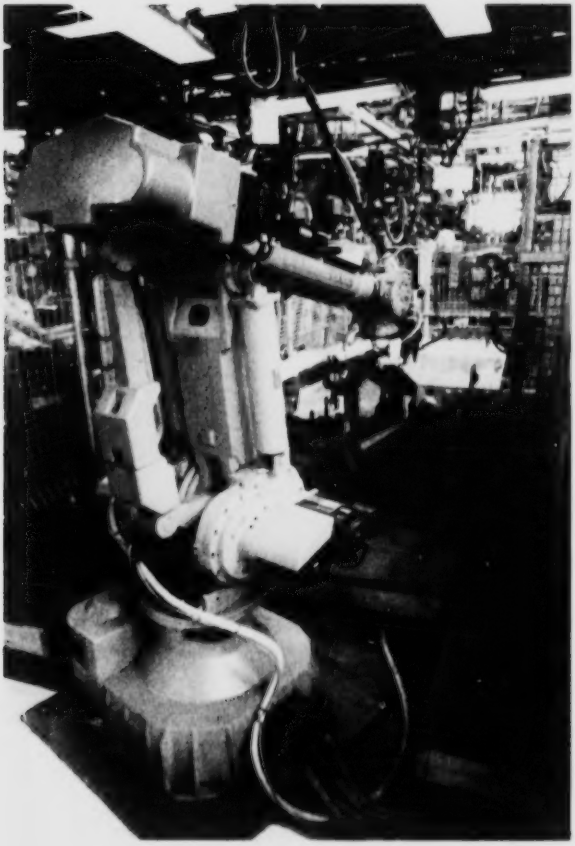
For example, the profitability of the company may suffer during a 2 or 3 year period of restructuring because of costs incurred (such as capital equipment purchases and additional training) without immediate effects on outputs. However, in the future the profitability of the company may increase at a faster rate than would be expected without restructuring. This is illustrated in the following chart.



Another internal force behind restructuring may be the introduction of new technology. Certain forms of new technology work much more efficiently when used within a particular form of work organisation.

If faults are to be quickly diagnosed and corrected, new machinery using 'mechatronics' require a knowledge of electro-mechanical systems. This needs people with a range of skills that cross previously traditional trade boundaries (for example, a combination of mechanical fitting and electronic trade skills).

In manufacturing, new technologies make work organisation based on teamwork and multi-skilled operators a more competitive approach than approaches based on traditional hierarchical work organisation and specialised operators.



AN INDUSTRIAL ROBOT

HOW IS RESTRUCTURING ACHIEVED?

Management and the workforce may understand why restructuring is needed, but planning and agreeing on how to restructure is likely to be the hardest step.

A strategic approach

We can point to examples of enterprises (including BHP at Westernport, Containers Packaging at Rocklea, and the Victorian Government Printing Office) that achieved huge turnarounds in competitiveness through restructuring. When we look at the approaches used by enterprises both in Australia and overseas that have successfully restructured, one common factor emerges: the development and implementation of a comprehensive, competitive strategy. The strategy needs to be comprehensive, and include all medium-term and long-term factors affecting competitiveness.

The competitive strategy also needs to be balanced and well integrated. For a manufacturing company, for example, the strategy could include three main aspects:

* marketing strategy;
* financial strategy;
* manufacturing/operational strategy (including technology and training).

Enterprises should not neglect any of these three main aspects. In addition, all elements in the strategy must

support the business goals. In other words, all decisions should support the business goals through a set of integrated strategies. Business goals may be developed or reviewed as part of a strategic planning process.

Strategic planning involves three steps:

* analysis of the present state of business;
* setting of short-, medium- and long-term goals for the business;
* the planning of an integrated strategy that will enable the goals to be achieved.

These three steps are illustrated below.

Good competitive strategies:

* are customer-oriented, giving due weight to costs, quality, flexibility and innovation;

* are formulated by, or in consultation with, those who must implement the strategies;

* integrate marketing, financial and operational strategies;

* set objectives that are finite, measurable, and achievable within stated budget and time limits, so that progress may be monitored;

* are flexible enough to incorporate changes within the planned period.

While marketing and financial strategies are important for a company's competitiveness, this booklet will focus on operational strategy.

Two key elements of the company's operational strategy are technology and human resources. Some companies place emphasis on technology while neglecting the role of human resources, while in other companies the reverse may apply. Due weight needs to be given to both. Also, the human resources strategy (e.g. work organisation change, job redesign and training) and the technology strategy (e.g. computer integrated manufacturing) should support each other.

Current restructuring in Australian companies focusses on changes in the human resources area. It is now

acknowledged that in recent years, Western countries have relied too much on new technology for productivity gains (as the IBM, USA case study in the box below illustrates). Although new technology will continue to play a significant role in competitiveness, in the 1990s human resource strategies will be the key to competitiveness in most companies in Western countries.

IBM Personal Computer Manufacturing (Raleigh, North Carolina)

IBM has a large manufacturing plant in the Research Triangle near Raleigh, North Carolina in the USA. In 1987 a new assembly line was developed to produce a new personal computer model. The latest robotic technology was applied to develop a complete assembly and packaging line requiring no human operators. It took a team of engineers and technicians two years to develop and perfect the plant. The plant then was in full production for a further year before it was dismantled - market forces resulted in the model being discontinued! Management staff at the factory now believe that quick development start-up and change of production lines are important in today's market, and that these are best achieved with a combination of operative staff and robots in the assembly and packing lines. They also have operatives working in teams or close together to improve social interaction and job satisfaction.

Companies wanting to restructure may develop their own strategies from scratch, or may adapt one or more of a number of standard (off-the-shelf) approaches. Some are broad, covering operational strategy and more, while others have a narrow focus. Standard approaches that have been used by Australian companies include:

* Total Quality Management (TQM) (see box);

* Just-in-Time (JIT), an approach which improves productivity and quality and which controls production and material flow;

* Integrated Manufacturing (described on page 34);

* Value-added Management (VAM) which critically evaluates all activities in terms of a value added to the product or service;

* Manufacturing Resources Planning (MRP II) which is a computer program that identifies the most efficient production plan and inventory level for all functions in the organisation.

Each of these would affect an enterprise's human resource strategy as well as other strategies (e.g. technology, production planning).

Total Quality Management

Total Quality Management (TQM) is an approach which integrates improvement in productivity and quality. The approach is 'total' in the sense that it involves:

- *all products or services;*
- *all processes;*
- *all people in the organisation;*

in the improvement efforts.

It includes and goes beyond quality control and quality assurance, by adding as key features, both quality improvement and productivity improvement. Many of its principles were first applied in Japan. It is in part based on the teachings of Edward Deming and Joseph Juran. Some Australian companies are currently using TQM as the main vehicle for restructuring.

In broad terms, the desired outcomes of these strategies are:

* greater competitiveness for the company in terms of cost, quality and flexibility;

* greater job satisfaction, security and pay for the employees of the company;

* that the workplace offers continuing education and training.

What are the elements of operational strategies involved in current restructuring? The main elements, contained in our definition of industry restructuring, are:

* new technology;

* change to work organisation;

* job redesign;

* award restructuring;

* definition of skill-related career paths;

* education and training.

The thrust of all the above elements is to obtain a more highly skilled and flexible workforce to support new technology and other enterprise strategies. A flexible workforce is one that can quickly and easily adapt to change at the workplace.

In order to understand the process of restructuring at the enterprise level, it is important to consider each of the six elements of operational strategy which are involved in the current restructuring process. Each of these elements are dealt with in the next sections.

New technology

The role of new technology in helping enterprises to become more competitive is well understood. This has been the main competitive strategy in Western countries for many years.

Since the Industrial Revolution, new technology mostly involved replacing people with machines or replacing old machines with new and better machines. The new machinery or equipment was usually faster and more reliable, so productivity improved.

New technology is now more than new plant and equipment used for manufacturing processes. It may include:

* computer hardware and software to help production management or service operations;

* new materials of product construction;

* new product designs that improve quality and efficiency of manufacture.

New technologies in these three categories have become important contributors to competitiveness in recent years.

Enterprises which are considering new technology face three dangers. Firstly, there is the danger of being *too conservative*. New technology is often evaluated as too expensive because only a simple analysis of cash flow is undertaken. Some new technologies bring competitive advantages which are hard to quantify in dollar terms. This is especially true of new technologies which help production management.

Secondly, at the other extreme there is the danger of being *too adventurous*. Some very sophisticated new technologies are not only very expensive but have some less obvious costs, such as the cost of intensive training.

In an article listed under the further reading, Danny Sampson advocates treading the fine line between being too conservative and being too adventurous in introducing new technology. He argues that technology choices should not be delegated to engineers and accountants, but must be guided from the top of the organisation, where the strategic vision should lie. The technology should fit the individual requirements of each enterprise's competitive strategy.

Thirdly, some new technologies perform inefficiently in a strictly 'Taylorist' form of work organisation. This is discussed in the next section.

Change to work organisation

The most important change occurring now through industry restructuring is the change in work organisation. The main form of work organisation used in Australia and other industrialised nations up to now resembled a pyramid structure with a strict hierarchy. This form was

most apparent in large organisations which had as many as ten or more levels in the hierarchy. This form was reinforced by the management approach developed by Frederick Taylor in the 1880s and 1890s. This approach, called 'Taylorism', involves:

* a strictly hierarchical work organisation;

* deskilling of work by progressively narrowing the scope of each job;

* analysing and then standardising the methods used in each job;

* strict supervision of workers at every level.

Taylorism is described in more detail in the following box. Though modified over a period of time, this management approach was successful for many years in achieving better productivity and efficiency. However, it is increasingly ineffective in the context of the sophisticated markets and new technology in the 1990s.

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Taylorism

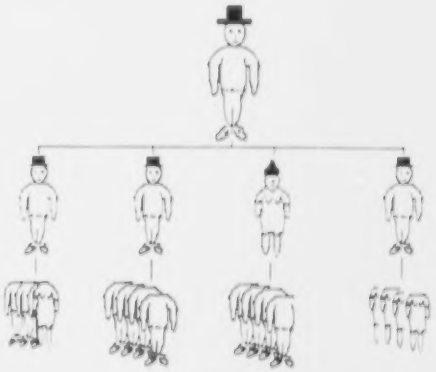
Frederick Winslow Taylor, an American industrial engineer, developed a system of work which suited the large factories resulting from the Industrial Revolution. He developed his principles of management in the 1880s and 1890s, and published 'The Principles of Scientific Management' in 1911. The key features of the approach are:

- *strict hierarchical organisational structure;*
- *narrowly defined jobs;*
- *narrow range of skills required to perform each job;*
- *standardisation of methods by precise specification of every task;*
- *factory floor workers cut off from decision-making;*
- *discouragement of social interaction among workers;*
- *authoritarian relations within the hierarchy;*
- *strict supervision of workers.*

The following quote from his work describes the underlying attitude:

> *Under our system, a worker is told just what he is to do and how he is to do it. Any improvement he makes upon the orders given him is fatal to his success.*

This approach generally led to improved cost efficiency but resulted in very low job satisfaction and loss of job control by the people at the factory floor level. They were not allowed to contribute ideas or suggestions for improvement, and had no say in the management of the organisation. "Park your brains by the door" was the catchphrase. The approach is illustrated in the following diagram.



Taylor's principles were applied to manufacturing and non-manufacturing organisations, both large and small. The approach, though modified over time, is still widely used today in industrial countries, particularly in larger organisations.

In the car manufacturing industry, Henry Ford early this century successfully added to Taylorism the features of:

- *standardisation of products;*
- *large volume/low cost marketing;*
- *flow-line assembly,*

to give an approach that has been widely applied in industrialised countries this century. This approach to manufacturing is often referred to as Fordism.

More recently, Taylorism and Fordism have been replaced by new forms of work organisation and manufacturing approach in a small but increasing number of enterprises in Europe, North America and Australia.

Many organisations now acknowledge the advantages of integrated types of work organisation which:

- place a higher value on the contribution of all people in the workforce;
- rely on a more highly skilled workforce;
- are more integrated, with better communication and smaller organisational units.

One way to achieve better communication is to have a flatter management structure with few hierarchical levels. To achieve smaller organisational units, large enterprises are being broken down into smaller business units, though these units may still be loosely associated. Also, even

within small organisations, teams may be formed to perform a defined set of related tasks. These teams are effectively "organisations within an organisation". The box below describes the concept of integrated work organisation in more detail.

In manufacturing, computer technology and integrated types of work organisation are being used to improve communication between machines and people. This approach has been called 'integrated manufacturing'. Some Australian and overseas manufacturers have implemented integrated manufacturing approaches.

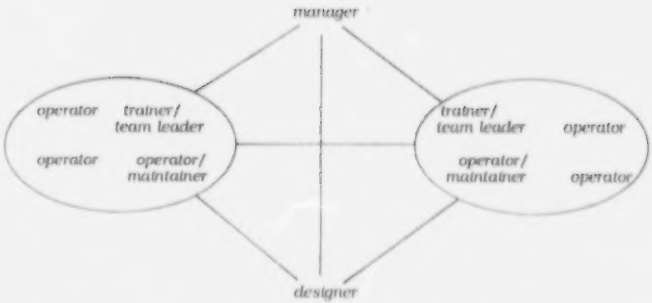
Integrated Types of Work Organisation

The typical manufacturing or service operation of today is surprisingly complex. There is complexity in the flow of materials, products and information between different departments in the organisation. (Think of the number of words transferred in one day within, to, and from your own organisation, by paper, by computer, by telephone or by face-to-face meetings.)

To respond quickly to market forces, this complexity must be reduced and the whole organisation must act as an integrated body. This may be achieved by integrating machines, people, systems and procedures. The people aspect of integration may involve the following approaches to work organisation:

- *flatter management structure with fewer hierarchical levels;*
- *skill broadening with less specialisation;*
- *smallness of scale (organisations become based on economy of scope rather than economy of scale);*
- *team-work where a small group of workers performs multiple functions.*

When the goal is integration and better communication through most or all of these approaches, an integrated type of work organisation will be the result. A simple integrated organisational structure based on two semi-autonomous teams is illustrated.



The skill requirement for each member of an organisation using this approach is such that there is a need for:

- *a higher level of skill overall;*
- *a broader band of skills (including possible skilling across functional boundaries such as production - maintenance - design boundaries and across traditional trade boundaries);*
- *better interpersonal and team-work skills.*

Important outcomes claimed of these approaches to work organisation are the ability of the organisation:

- *to use some new technologies more effectively and efficiently, particularly those involving equipment that combines mechanical, fluidic and electronic systems;*
- *to allocate staff to a wider variety of tasks (particularly useful for small organisations);*
- *to use modern concepts of quality management and improvement;*
- *to respond faster and more effectively to market demands.*

Organisations planning to implement integrated types of work organisation may move in a small way in this

direction but may encounter barriers to change. The present structure of industry in Australia and other Western countries is based on:

* specialisation of the skills of workers;

* a high degree of segmentation of occupations because of past industrial awards.

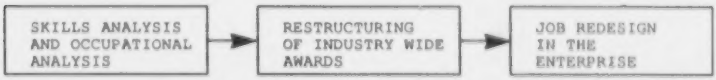
Thus, restructuring also needs to address the skills mix of the workforce and the substantial restructuring of industrial awards, and these are discussed below.

Job redesign

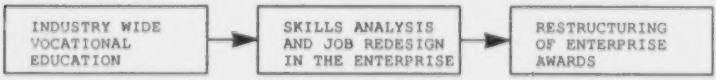
Changes to work organisation will affect the design of each job in the organisation. Every job may need to be redesigned to fit the restructured work organisation.

Job redesign at the enterprise level may follow restructuring of industry-wide awards, or it may provide the basis for restructuring of an enterprise award. In the latter case, vocational education relevant to the industry may provide a starting place for job redesign. These two approaches are illustrated below.

USUAL SEQUENCE FOR INDUSTRY AWARDS:



USUAL SEQUENCE FOR ENTERPRISE AWARDS:


INDUSTRY WIDE VOCATIONAL EDUCATION
SKILLS ANALYSIS AND JOB REDESIGN IN THE ENTERPRISE
RESTRUCTURING OF ENTERPRISE AWARDS

Too often in the past, job redesign was based only on the technical aspects of production or operational processes, such as minimum cycle time for a task, and optimum person-machine interaction. In addition to the technical aspects, job design needs to take account of the human aspects, such as job satisfaction, range of skills required, and level of autonomy of the worker.

An approach which considers both aspects of job redesign, human and technical, is called a *socio-technical* approach. Some of the books annotated at the end of this booklet describe the socio-technical approach to job redesign.

When considering the human aspects of job redesign, current jobs may be analysed to provide a detailed listing of the tasks performed. In addition, the skills required to perform the current jobs may be analysed to provide a detailed listing of skills required. A discussion of the methods of job analysis and skills analysis is found in a book written by Geoff Hayton and others called *Training for Australian Industry*, which is listed in the further reading at the end of this booklet.

In addition to the tasks and skills required, a range of other issues needs to be considered. Some of these job redesign issues are listed in the following box. The application of some of these principles to an Australian manufacturing company is described in the box on the Palila Clothing Company on page 39. These principles have been applied to service organisations, including the Australian Taxation Office. In particular, the keyboard operations jobs have been redesigned extensively and work has been reorganised as part of the restructuring at the Australian Taxation Office.

Job redesign principles

The following human and technical principles of job redesign have been suggested by Fred Emery, Peter Higgins and others:

- *the concept of closure, where a team of workers complete a whole series of tasks (e.g. the assembly of a car component), rather than perform one small repetitive task;*
- *the inclusion of control and monitoring tasks, whereby workers are delegated the responsibility for controlling the workflow and checking production;*
- *the inclusion of quality inspection tasks, whereby workers are delegated the responsibility for controlling quality;*
- *the opportunity for task variety, where workers are given the choice to move between tasks;*
- *minimum specification by management of production or operation objectives, so that the workers may choose the details of how they perform the job;*
- *self-regulation, where workers have the freedom to choose how they accomplish their production or operation objectives, and are offered training in the technical and team skills needed for a self-regulation approach;*
- *co-operative job structures which encourage employees to use the widest possible range of skills from within the same work group;*
- *rapid feedback on performance;*
- *responsibility for own tools, equipment and territory;*
- *the monitoring and control of errors, waste and variation must be as close to their point of source as possible;*
- *reduction of errors, waste and variation to reduce the level of supervision and control.*

To consider the technical aspects of job redesign, Richard Curtain and Neil Watson suggest that the area, jobs and technology concerned must be defined, then a list of the

technical issues and problems needs to be prepared. The methods of analysis may include:

* methods study, including workplace layout and process analysis;

* work measurement.

Details of these are given in *Work Study* by the International Labour Office, listed at the end of this booklet.

Palila Clothing Company

Palila manufactures a wide range of garments for government organisations and companies such as King Gee, Cant Tear 'em, Stubbies and Yakka. Palila concentrates on the Australian market, but through other companies some of its products are exported to the United States and Japan.

To improve productivity and reduce times between order and delivery, Palila has changed work organisation and redesigned the jobs of operators. Traditional flow line production with specialised operators on piece work has been discontinued. Palila has implemented quick response manufacturing in which production cells of 6 to 8 operators are responsible for making a complete product. The team is rewarded for productivity and quality. Machines are arranged in a 'horseshoe layout'. The product moves around the horseshoe. The progress (or lack of progress) of the product is visible to the team. Members of the team are multi-skilled, being able to operate any of the machines in the horseshoe. Thus bottlenecks can be quickly attended to.

To support these changes, in-house training has been increased. Palila is negotiating with the Toowoomba College of TAFE to develop basic and advanced machining courses covering a wide range of skills. Another key element of restructuring at Palila includes an active consultative committee.

Who should undertake the job redesign project? Many suggest a participative approach, where the people doing the job identify the issues and explore solutions. Fred Emery argues that the people doing the job are the experts. However a job design expert may be involved to facilitate the project.

Award restructuring

Award restructuring is an important part of restructuring in the enterprise and industry-wide restructuring. Significant changes in work organisation and job redesign within enterprises were not possible under most industrial awards in Australia in the 1980s. The main problems were an excessive number of rigidly defined occupational classifications and overly prescriptive provisions which limited the development of enterprise level flexibility and change.

There has now emerged a growing consensus among most unions and employer groups that substantial restructuring of industrial awards is required. In this climate of change, the Australian Conciliation and Arbitration Commission handed down a National Wage Case Decision on August 12, 1988 which not only aimed to initiate wide-ranging changes to award structures but also addressed the whole issue of workplace reform. This part of the decision was termed the Structural Efficiency Principle (see box). State industrial tribunals have subsequently adopted similar principles.

There are three crucial elements in the Structural Efficiency Principle:

- the implicit idea that enterprises must move away from the Taylorist approach to work organisation;

- the assertion that award restructuring must benefit both employers and employees - employers through improved competitiveness, and employees through improved pay, more training opportunities and more varied and fulfilling jobs;

- the addressing of cases of discrimination against sections of the workforce.

On the last point, the sections of the workforce chiefly disadvantaged are women, the young, migrants and those with disabilities. Women comprise nearly half of Australia's workforce but are under-represented in senior positions, and on average earn only two thirds of the wages of men. It is clear that because of the family responsibilities of many women employees and various other factors, Australian industry is not taking full advantage of women's skills. Award restructuring presents

The Structural Efficiency Principle

The August 12, 1988 Australian Conciliation and Arbitration Commission decision stated:

> *...the reviews will ensure that the existing award structures are relevant to modern competitive requirements of industry and are in the best interests of management and workers. Increases [in pay]... shall only be justified if the union(s) party to an award formally agrees(s) to co-operate positively in a fundamental review of that award with a view to implementing measures to improve the efficiency of industry and provide workers with access to more varied, fulfilling and better paid jobs. The measures to be considered should include but not be limited to:*

- *establishing skill-related career paths which provide an incentive for workers to continue to participate in skill formation;*
- *eliminating impediments to multi-skilling and broadening the range of tasks which workers may be required to perform;*
- *creating appropriate relativities between different categories of workers within the award at enterprise level;*
- *ensuring that working patterns and arrangements enhance flexibility and efficiency of industry;*
- *including properly fixed minimum rates for classifications in the award related appropriately to one another with any amounts in excess of these properly fixed minimum rates being expressed as supplementary payments;*
- *updating and/or rationalizing the list of respondents to the award;*
- *addressing any case where award provisions discriminate against sections of the workforce.*

a big opportunity to redress this. The following steps should be taken:

- awards should be restructured to remove barriers to the employment of women and to remove other forms of gender bias;
- consultative committees formed to consider restructuring should include women representatives;
- skills analysis and skills audit projects should avoid gender bias by giving due weight to all relevant skills, including inter personal skills;

* flexible work patterns should be introduced to allow women (and men with family responsibilities) to take up interrupted careers without penalty, to work more flexible hours, or to take up permanent part-time employment.

Essentially, if wages and job progression are more directly linked to skills, skills acquisition is encouraged, and each person's full range of relevant skills is used, then award restructuring will be on track and discrimination largely will be removed.

As stated earlier, there are two alternative approaches to award restructuring:

* industry-wide awards;

* enterprise-level awards (called Certified Agreements under the 1988 Industrial Relations Act).

There is much debate in Australia on the merits of the two approaches. Advantages claimed of the centralised industry-wide approach are:

* greater likelihood of industrial harmony;

* greater likelihood of justice in wage relativities;

* consideration of public interest and national economic policy;

* ease of mobility among enterprises and greater portability of training;

- with restructured awards, sufficient flexibility for structural efficiency at the enterprise level.

Advantages claimed of the enterprise award approach are:

- full flexibility to allow award restructuring to support more fully the enterprise's competitive strategy;
- greater scope for change to work organisation and job redesign;
- an opportunity to have one award rather than several apply to the enterprise.

For the industry-wide approach, award restructuring should be preceded by industry-wide skills analysis and job redesign. For example, for restructuring the National Metal Industries Award, broader skill groups or standards were identified. The job redesign resulted in three main trade streams:

- electrical and electronic;
- mechanical;
- fabrication;

and 14 skill levels from production worker to professional engineer level were identified. The restructured award defines each job classification in terms of skill standards. Each classification is much broader than those in the old award which had 348 job classifications and 1800 different wage rates.

Each enterprise may respond differently to a new industry-wide award. Some enterprises may use this as a trigger to change work organisation and job design and perhaps go back to review their competitive strategy. Others may take a superficial approach and only reclassify workers to the new award and pay the increased wages. In the former case, a skills audit in the enterprise may be undertaken to assist in the reclassification of workers and to identify training needs of individual workers and groups of workers. A description of skills audits is given in another title in this series called *Getting to Grips with Skills Audits* by Terry Clark.

For the enterprise-level award approach the enterprise usually:

* reviews its competitive strategy;
* translates the strategy into guidelines for changing work organisation and job design;
* undertakes job redesign projects, including skills analysis;
* sets a new enterprise award based on these outcomes.

A skills audit (to identify the skills held by workers) may be undertaken in conjunction with the skills analysis (to identify the skills required for each job). Alternatively, a skills audit may be undertaken after award restructuring to help with reclassification and identification of training needs.

Private companies and government organisations that have used this approach have mostly used their own staff to undertake the work involved, and have used consultants to facilitate the process at key stages. Extensive employee participation at all stages of the process is regarded as essential for success.

Definition of skill-related career paths.

The establishment of skill-related career paths is one of the important elements of the Structural Efficiency Principle. Two key questions are:

* what are skill-related career paths?

* why are skill-related career paths important in restructuring?

Skill-related career paths are important in restructuring because they:

* encourage individuals to upgrade their skills by developing additional vocational skills, since a more highly skilled workforce is required in many industries;

* help to ensure that skills acquired, by formal and informal means, are recognised by employers and educational institutions;

* reduce unnecessary repetition of education and training when a person seeks to upgrade;

* promote good design of a wide range of education and training programs.

Individuals are encouraged to upgrade their skills because higher rates of pay apply to job classifications requiring a higher level of skills. Also training is being provided to develop skills relevant to each classification. Employers and unions differ, however, on whether pay should be linked to relevant skills possessed (the union position) or to relevant skills possessed and used in their current job (the employer position). The 1989 national wage case decision of the Industrial Relations Commission stated that workers should not be placed in a classification unless they have the training and experience necessary to perform the full range of functions outlined by the new classification, and are actually required to perform those functions.

Job classifications which are not defined directly in terms of skills have usually relied on a definition in terms of:

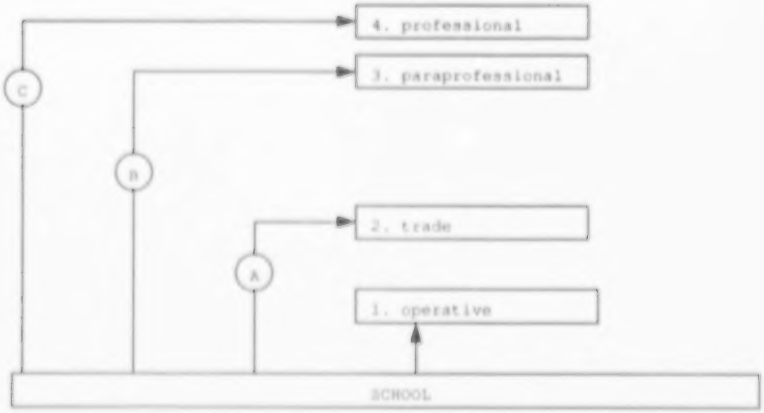
* the duties performed;

* the educational qualifications and/or period of time of on-the-job experience required for entry.

A simple hypothetical example is shown in the diagram on the next page.

In this example, to progress from job classification 1 to 2, the person needs to undertake training program A. The relevant skills or competencies acquired through on-the-job training and/or experience while working in job classification 1 will generally not be recognised by either the employer or the TAFE college offering the training.

The same situation occurs for the person wishing to progress from job classification 2 to 3 or from 3 to 4. In each case, the person must complete the full training qualification at the institution (TAFE college, college of advanced education or university) appropriate for the training sought. In some cases, some credit is given for completion of another course, but this has occurred infrequently or inadequately in the past.



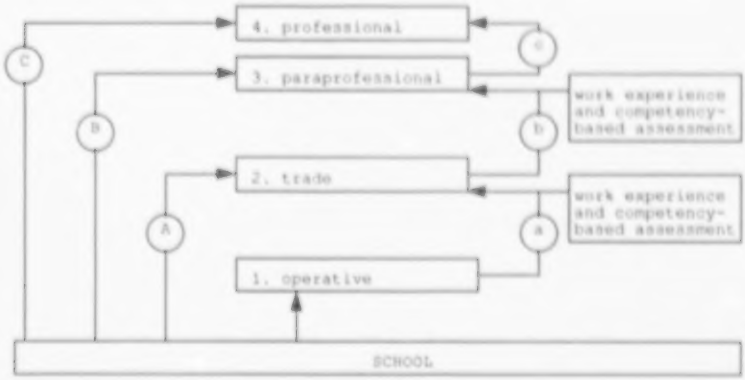
Notes: 1. *A is the training required to enter 2.*
B is the training required to enter 3.
C is the training required to enter 4.

2. *Five broad occupational levels are generally recognised in manufacturing and engineering in Australia and many overseas countries for simplicity. The 'trade-technician' level between 2 and 3 has been omitted from this hypothetical example.*

Awards which have skill-related career paths usually define each job classification in terms of the *skills* or *competencies* required. (The terms skill and competency are discussed in another title in this series called *Getting to Grips with*

Competency-based Training and Assessment by John Foyster). Such definitions allow easier translation into a training program. They also make it easier to specify the skills or competencies required to progress from one job classification to another.

A hypothetical example of a skilled-related structure is shown below.



In this example, a person may progress to a job classification such as number 3 by any one of three paths:

- by completing training program *B*;
- by upgrading from job 2 and completing a smaller package of training represented by *b*;
- by undertaking other combinations of work experience and training and passing a competency-based assessment derived from the definition of the job classification.

Another common feature of awards that incorporate skill-related career paths is the specification of a reasonable number of vertical skill levels to facilitate progression upwards. For example, in the new National Metals Industries Award there are 14 skill levels, such that the training required to move from one level to the next level is not too onerous. If this principle were applied to our hypothetical example, each of the job classifications shown could be divided into two or three skill levels and the skills or competencies required for each could be specified.

Education and training

Education and training is playing a vital role in industry restructuring. Education and training is a medium- to long-term investment in our workforce - an investment just as important if not more important than investment in equipment.

The investment in training needs to be increased. The external forces acting on Australian industries, described earlier, require more competitive enterprises through an integrated work organisation and a more highly skilled workforce. The case studies described in this booklet show that the critical skills are often not technical skills, but communication skills such as literacy and team skills.

The current restructuring of industrial awards supports this push towards a more highly skilled workforce. Skills acquisition by individuals is being encouraged through restructured awards. Pay rates are being linked to relevant skills possessed and used (though this is still an issue for debate). This is increasing the demand for all types of training, including:

* in-house industry training (off-the-job and on-the-job);

* training by TAFE and higher education institutions;

* training by private providers.

The type of training required is changing in many ways. The old model of work and training involved an initial, intensive, once-only training program (e.g. an apprenticeship with TAFE trade training) followed by full-time work with little or no formal training for the remainder of the person's career. The new model involves intermittent or continuing education and training throughout the person's working career. More intensive initial training will still be required in most cases. TAFE will continue to be the largest provider of post-secondary initial training courses for industry. About three-quarters of a million students are currently undertaking such courses in TAFE in Australia.

A TAFE CLASS AT A COLLEGE

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Initial vocational education and training should provide a broad knowledge of the industry and a good foundation for further training. It is widely acknowledged that initial vocational training should also involve the development of both general skills (such as inter personal communication, quality improvement, and safety) and specific vocational skills.

Intermittent or continuing education and training could be classified into three types:

* updating;

* upgrading;

* retraining.

Updating is a refresher course in skills lost through lack of recent use or the training in new techniques or technologies. Upgrading is the acquisition of new skills to achieve career progression. Retraining is the acquisition of a whole new set of skills to effect a significant career change.

Restructured awards are having a significant impact on training for upgrading by encouraging people to undertake the training required to move from one skill level to the next higher level. These smaller packages of training, represented on the right hand side of the diagram on page 49, may be provided by the enterprise in-house or by an educational institution such as TAFE. This will reinforce the trend in TAFE towards the provision of smaller packages of training. The packages or modules may stand

alone or be undertaken with other modules to build up to a larger accredited course.

Considerable effort is being made by TAFE agencies, working cooperatively with industry, in developing national curricula based on training modules of agreed content. The mix of modules will vary depending on individual, college, regional or State needs. By this means, national consistency in training approach is being achieved as Federal award restructuring occurs.

In addition to providing standard training modules and accredited courses, many TAFE colleges are offering to design and provide customised training for individual companies. With the introduction of the Training Guarantee by the Commonwealth Government, the demand for such training is expected to increase significantly. Customised training requires curriculum design based on an analysis of the training needs of the organisation. In some cases, considerable resources are devoted to the development of learning materials that may be used at the workplace at a pace and time to suit the individual learner. An example is the Queensland Distance Education College modules for the Callide "B" Power Station (see box).

As well as providing various forms of training, TAFE colleges are increasingly involved in industry consulting and collaborative projects to support restructuring. Many of these projects are innovative and may provide models for future training arrangements. Examples include:

* skills analysis and skills audit projects for companies and government bodies;

* technical research and development projects for industry;

* development of on-the-job training materials;

* on-site training arrangements and accreditation of in-house training;

* implementation of computer managed learning (CML) systems and development of learning guides;

* skills centres jointly supported by industry and TAFE.

Callide "B" links with TAFE

Callide "B" is a modern thermal power station near Biloela in Central Queensland. To increase productivity and obtain efficient power station operation, the Queensland Electricity Commission in 1987 negotiated a new agreement with the power industry unions at Callide "B". The agreement involved job redesign with provision for career paths, training and multi-skilling. Some key features of the later restructured Metals Industries Award were implemented at Callide "B".

A large effort was required to develop training at Callide "B". Training modules were designed so that individual workers could progress through the program. The modules were linked to career paths and award classifications. A variety of training delivery approaches were used, including self-paced learning, but testing and progression of workers was documented by a computer-managed learning (CML) program. Most of the training was delivered at the Callide "B" power station.

While some training modules are specific to Callide "B", a greater number are based on broader industry and community needs, as identified by TAFE. Instructors have been accredited by TAFE and some TAFE courses are conducted on-site. Callide "B" is involved in joint ventures with TAFE and have established close working relationships with Queensland Distance Education College, Gladstone College and North Point College.

The joint venture agreement between Callide "B" and the Queensland Distance Education College (QDEC) has resulted in

QDEC providing training materials to Callide "B" for on-site training. Testing at the end of each training module is also conducted on-site by Callide "B" instructors, with the results sent to QDEC for recording of student progress. The power station is recognised by TAFE as an Authorised Training Organisation.

Continuing training is now widely accepted as an integral part of work at Callide "B". The high training effort is a vital part of the strategy of Callide "B" for achieving productivity.

Overview

While discussing how restructuring is achieved we have mentioned the importance of taking a strategic approach and the need for each company to develop its own competitive strategy. This strategy will guide all stages of restructuring.

Restructuring is likely to involve:

* change in work organisation towards an 'integrated' structure;
* job redesign, with emphasis on human aspects and cross-skilling;
* award restructuring, either at enterprise level or industry wide;
* skill-related career paths;
* greater emphasis on education and training to support career progression and lifting the skills of the workforce generally.

CONCLUSION

Industry restructuring is occurring in Australia and overseas countries because of world-wide market trends. The two main trends are greater competition and greater sophistication of markets, with quality, service, flexibility and innovation becoming more important aspects of market competition.

The pressure to restructure will vary from industry to industry and enterprise to enterprise. Some industries and enterprises are subject to intense international competition; others are not. In all cases, however, other internal forces (such as new technology and the need for more satisfying jobs) will provide some pressure to restructure.

In Australia, restructuring usually involves award restructuring so that big changes to work organisation and job redesign may be implemented. The emphasis now is on the optimum use of people within each organisation to give a competitive edge.

The precise way in which each enterprise restructures should show sensitivity to the needs and the unique position of each enterprise. Nevertheless, many features are in common. These include:

* the need for a strategic approach;

* change in work organisation;

* job redesign;

* award restructuring;

* skill-related career paths and integrated training.

None of these may be planned and implemented quickly and long-term planning for change is required. It is hard but crucial to success. Many enterprises will take a superficial approach or take no action at all. Many enterprises in this category won't survive the 1990s.

FURTHER READING

ACTU/TDC Mission to Western Europe. (1987). ***Australia Reconstructed: A report by the Mission Members.*** AGPS, Canberra.

The ACTU/TDC Mission report describes the observations of Mission members and their assessment of the implications of these observations for Australia. The report is divided into six chapters each dealing with one major policy area, viz. macroeconomic policy; wages; prices and incomes; trade and industry; and trade unions. Within these chapters, the common elements of successful approaches to these issues are isolated, and specific examples given. The report also contains recommendations based on insights gained from the processes and policies which have proved successful elsewhere and which are adaptable to the Australian situation.

Australian Vehicle Industry. (1989). ***Meeting the Challenge: What award restructuring really means. Overseas Mission report summary.*** Dept. of Industrial Relations, Canberra.

The Mission's main task was to examine issues relevant to restructuring, existing classifications in various company awards, and the contribution made to international competitiveness by plant-level skill formation, career and accreditation, and work and management. This booklet provides highlights of the report and covers the major areas of interest investigated by the Mission.

Award Restructuring: Resource package for TAFE teachers. **(1990).** NSW Department of TAFE, Department of Industrial Relations, Department of Employment, Education and Training, Sydney.

This resource package which also includes a video entitled *Life After Debt: Award restructuring explained* is intended for use in workshops on award restructuring designed to provide the basis for a national awareness-raising strategy on award restructuring within all TAFE systems. The material explains the award restructuring process as well as the economic context which necessitates it. In addition, the major training issues facing both TAFE and industry are identified. The package also outlines the implications of award restructuring for TAFE teachers, staff and managers and techniques for managing the changes brought about by restructuring.

Blache, K. M. (1988). ***Success Factors for Implementing Change: A manufacturing viewpoint.***

This book provides an in-depth analysis of the human aspects of implementing technological innovations. The information is presented from an industrial manufacturing viewpoint. The basis of this book is an attempt to provide answers to the question: "Why is it so difficult to get improvement through new technology application even though most people favour it and companies have been attempting to do it for over fifty years?"

Business Council of Australia. Industrial Relations Commission. (1989). ***Enterprise-based Bargaining Units: A better way of working: report to the Business Council of Australia by the Industrial Relations Study Commission.*** Business Council of Australia, Melbourne.

The main recommendations of this report are: an enterprise-based employee relations approach to settling terms and conditions of work, rather than the current centrally- driven industrial relations approach; major changes in the structure of unions, and; changes to allow employers and employees greater freedom to contract with respect to the terms and conditions of work.

Clark, T. W. (1990). ***Getting to Grips with Skills Audits.*** TAFE National Centre for Research and Development, Adelaide.

Skills audits are an identification of the skills required and held by the workforce. They help enterprises and industries to identify the complete range of skills at their disposal and identify deficiencies in the skills they require. This booklet explains what skills audits are, setting them in the wider context of industry and award restructuring. It also looks at when to use and who should undertake skills audits. Four case studies are described and the implementation of the outcomes of a skills audit discussed. An annotated bibliography is included.

Curtain, R. (1988). ***Guidelines on Career Path Development and Job Restructuring: Fifteen issues to consider.*** University of Sydney, Department of Industrial Relations, Sydney. (Working paper series, No. 8, 1988.)

The purpose of this paper is to provide employers and unions with a checklist of 15 points or issues that may be considered in award restructuring negotiations, and which could provide a basis for formulating an industry level framework for restructuring and options for career paths within, and between enterprises. The paper includes a discussion of each issue. It was originally published as Chapter 5 of a report to the Interstate Commission and the Stevedoring Industry Review Committee entitled Options for Skills Upgrading, Career Paths and New Job Structures for the Stevedoring Industry. However, the guidelines are framed in such a way as to apply to industry in general.

Curtain, R. (1990). ***Sixteen Case Studies of Award Restructuring. Working paper series.*** Industrial Relations Research Centre, University of NSW, Sydney; National Key Centre in Industrial Relations, Monash University, Melbourne.

Key features, including work re-organisation, of sixteen case studies of award restructuring are described and discussed. The case studies cover a wide range of approaches to restructuring and a wide range of industries. Most of the case studies are from various manufacturing industries. Two are service organisations: one from the insurance industry, and one from telecommunications - the operator assisted services division of Telecom Australia.

Curtain, R. & Mathews, J. (1990). 'Two models of award restructuring'. ***Labour and Industry***.4(1).

This paper argues that there are two models of award restructuring being implemented in Australia: the cost minimisation approach (CMA) and the productivity enhancement approach (PEA). The cost minimisation approach involves a simple and superficial trade-off of benefits and costs between employee and employer. The productivity enhancement approach requires a strategic view of the organisation to be taken, with the tackling of more difficult issues such as changes to work organisation and job redesign. The paper argues that the latter approach will provide the greater improvement in competitiveness in the long-term.

Dawkins, J. S. (1988). ***Industry Training in Australia: The need for change.*** NPITC, Adelaide.

This document is a discussion paper which canvasses issues and options to provide a basis for wide-ranging consultation. The paper states that persistent skill shortages exist across a range of industries and occupations. Current training activity by employers is uneven, ranging from best practice to no training at all. Recent Government reforms have been to improve the quality of the training system, through reforms to the apprenticeship system, advisory mechanisms and TAFE, and the introduction of the Australian Traineeship System. The chapter headings are in the form of questions, inviting the reader to respond.

Dawkins, J. S. & Holding, A. C. (1987). *Skills for Australia.* AGPS, Canberra.

This report outlines the Government's approach to skills and skill formation. It lists the program directions and priorities for 1987-1988. It is believed that our skills formation and training arrangements are not yet adequate to meet the demands on our human resources and labour force skills, imposed by the structure of the economy and improvements in Australia's international competitiveness.

Department of Industrial Relations. (1988). *Labour Market Reform: The industrial relations agenda.* AGPS, Canberra.

This paper outlines a comprehensive approach to the industrial relations aspects of labour market reform and links them with other key policy areas such as employment, education and training, and industry policy. A comprehensive restructuring of industrial awards at the industry level is identified as the key feature of the reform process. This will provide the necessary framework for the integration of job classifications and the development of skill-based career paths. Award restructuring will have important flow-on effects to the training system. The document emphasises the need to increase the relevance of training arrangements to industry requirements.

Emery, F. (ed). (1969). ***Systems Thinking: Selected readings.*** Penguin, Harmondsworth, Eng.

This book covers precedents to systems theories, properties of open systems, the environment of a system, human organisation systems including socio-technical systems, and systems management. Emery describes an approach to job design based on socio-technical systems.

Foyster, J. (1990). ***Getting to Grips with Competency-based Training and Assessment.*** TAFE National Centre for Research and Development, Adelaide.

This document is intended to introduce the reader to the ideas associated with competency-based training. It explores the meaning of competence and explains what is involved in competency-based teaching and learning. The need for assessment and ways of going about it are discussed, as well as the implications of competency-based training for employers, teachers and learners. A short test for the reader appears at the end of the book.

Gough, R. & Stiller, L. (1983). "Technology, control, information and work organisation: what are the options?" ***Work and People.*** 9(2), 9-13.

New technology has the potential to restrict or expand opportunities for effective job redesign in an organisation. This article discusses a range of technological and organisation design options and highlights the political nature of design solutions. Two specific examples discussed are information technology and metal product

manufacturing technology. Information systems and information technologies are highlighted as being of crucial concern in relation to job redesign.

Hall, W.C. (ed.) (1989). ***Industry Restructuring: Extracts from Centre publications.*** TAFE National Centre for Research and Development, Adelaide.

This document contains twelve articles/extracts and is intended as background reading and/or part of an in-service course on award restructuring. It provides a straightforward account of industry restructuring and discusses the implications of restructuring for TAFE courses, TAFE teachers and industrial training. It makes a special plea for continuing education programs which enable TAFE lecturers to update their technical/vocational knowledge and skills in their teaching areas, pointing out that there is an urgent need to provide ways in which teachers can keep abreast of technological change.

Hall, W. C. (1988). ***TAFE/Industry Partnership: Towards more effective relationships in course development and implementation.*** TAFE National Centre for Research and Development, Adelaide.

This project was designed to help shape the response to TAFE changing industrial (and commercial) circumstances. There are two main aims: to summarise what mechanisms and structures at every level are presently used by TAFE and industry to liaise with each other; to evaluate these mechanisms and structures (including why the mechanisms and structures are used); and, if appropriate,

suggest possible alternative or additional mechanisms and structures for liaison on course development and implementation; and to produce a report for TAFE and industry on the vocational training required in TAFE and industry so that TAFE and industry might respond more effectively to the economic development needs of the country. This paper includes a brief summary and evaluation of present industry training models.

Hall, W.C. & Hayton, G. (1988). Industry Restructuring and TAFE: A discussion paper. TAFE National Centre for Research and Development, Adelaide.

This booklet provides a summary of industry restructuring, and discusses the implications for TAFE courses and TAFE teachers. It aims to encourage discussion within TAFE colleges of the main issues arising from the restructuring challenge.

Hayton, G., Clark, T., Guthrie, H., Fuller, D. & Oxley, S. (1988). ***Training for Australian Industry: A guide to research techniques for assessing industry training requirements.*** AGPS, Canberra.

This manual is principally concerned with the development of methods aimed at identifying industry occupational skill requirements as a basis for developing appropriate education and training responses. It describes methods of industry analysis, labour market analysis, occupational analysis and training needs analysis. It also presents a general approach to planning, conducting and reporting workforce studies.

Hayton, G. & Cheyne, M. (1988). ***Evaluation of Post-trade Courses in Fluid Power Relevant to the National Metal Industries Award.*** AMWU, Sydney.

This report is the result of a commission to evaluate the pneumatic and hydraulic post-trade courses relevant to the National Metal Industries Award. The findings are reported with recommendations.

Hayton, G. & Harun, M. (1988). ***Training for Integrated Manufacturing: A review of recent literature.*** TAFE National Centre for Research and Development, Adelaide.

An explanation of integrated manufacture is provided and then the literature covering the trend from mass production to integrated (or flexible) manufacturing is discussed. Technical and human aspects of integrated manufacturing are considered. The effects on the manufacturing skill requirements are discussed with reference to the literature. The paper is concluded with an examination of the implications of integrated manufacturing for TAFE and industry training.

Hayton, G. & Loveder, P. (1990). ***Training for Integrated Manufacturing: case studies.*** TAFE National Centre for Research and Development, Adelaide.

This report describes the trend towards integrated manufacturing in recent years and discusses the reasons for this trend. As in the earlier report entitled: *Training for integrated manufacturing: a review of recent literature*, an

explanation of integrated manufacturing is provided. This report describes a number of cases of manufacturers and educational institutions in Australia and overseas. Each has implemented, and/or provided training for integrated manufacturing. The implications for TAFE in Australia are discussed.

Hayton, G., Neylon, K., Inglis, A. & Hayes, M. (1989). ***Integrating Quality Concepts into TAFE Courses.*** TAFE National Centre for Research and Development, Adelaide.

This report describes a project commissioned by the National Industry Extension Service of the Commonwealth Dept. of Industry, Technology and Commerce, to research industry training needs in quality, and to develop curricula on quality for integration into existing TAFE courses. Areas covered include philosophy of quality, policy suggestions, industry surveys, curriculum framework and more. The report is especially aimed at senior TAFE staff, curriculum developers, TAFE staff developers and TAFE teaching staff.

Higgins, P. (1986). "Trends in automation and work in manufacturing. ***Journal of Occupational Health and Safety - Australia and New Zealand.*** 2(1) P.33-37.

This paper discusses past and current trends in manufacturing, with a focus on the interaction of work organisation, technology and skill requirements. It describes the rise of scientific management and the polarisation of work. It argues that with the introduction of new technology in manufacturing there is a choice

between work organisation and job design based on skilling or deskilling.

International Labour Office (ILO). (1979). *Introduction to Work Study. 3rd rev.ed.* Geneva: ILO.

This book is a standard text for industrial engineers and work study specialists. It describes the principles and methods of method study and work measurement. A systematic *technical* approach based on eight key steps is described, with many examples given to illustrate the approach. The key steps described are: select the job to be studied, record the facts, examine critically, develop the most economic method, measure the quantity of work, define the new method, install and maintain the new method.

Interstate Commission. (1989). *Interstate Commission Waterfront Investigation: Special studies volume one.* AGPS, Canberra.

Parts of this volume provide useful guidance on methods of job redesign, skills analysis and development of career paths. Part 4 contains a pilot study on participative job design by Richard Curtain and Neil Watson. It describes the seven stages of job redesign using a socio-technical systems approach. Part 5 contains a description of a study undertaken by Richard Curtain and Optimise Australia Pty Ltd., which involved a skills review, identification of training needs and development of career paths.

Majchrzak, A. (1988). ***The Human Side of Factory Automation: Managerial and human resource strategies for making automation succeed.*** Jossey-Bass Publishers, San Francisco.

In this book the author provides a valuable approach for addressing the full range of management, human resource and organisational issues that arise when factories implement advanced manufacturing technology. Effects of automation on job design, organisational structure and union/management relations are examined. The book presents a detailed framework (the Human Infrastructure Impact Statement) that professionals in management and technical positions can use to successfully anticipate these changes.

Mathews, J. (1989). ***Tools of Change: New technology and the democratisation of work.*** Pluto Press, Sydney.

This book looks at how work is changing and argues that its future will depend on the interrelated effects of new technologies, new systems of work organisation, new patterns of skill formation and new industrial relations. Technology and computerisation can be used to alienate work further, or to link a more open, democratic workplace with greater productivity and economic success.

Matthews, J. (1989). ***Award Restructuring: The challenges and opportunities for TAFE.*** State Training Board, Melbourne.

This report summarises information currently available on award restructuring and industry training, describing some of the implications for TAFE. The paper outlines the scope of the changes to job structures and skill formation processes that are likely to flow from award restructuring. Also examined are the training developments already underway in industry, based fundamentally on moves in the direction of competency-based job structures and training. Therefore, as the major public provider of training services to industry, TAFE will inevitably have to rethink the mode and scope of its operations, as skill and training become more focused elements of Australia's industrial revival.

Pappas Carter Evans & Koop/Telesis. (1989). ***What Part will Manufacturing Play in Australia's Future: Interim report of the Pappas Carter Evans & Koop/Telesis study.*** Australian Manufacturing Council, Melbourne.

This work is the result of phase one of a three-phase project. The questions addressed include; how can manufacturing contribute to a more prosperous future for Australia, and how can Australia add more value to its resource products. Other topics discussed are scale intensive industries, exporting firms, Asian opportunities and the "new manufacturing culture".

Samson, D. (1989). "Achieving competitiveness through 'strategic' operations." ***Australian Director.*** Aug. 17-64 (part 1); part 2 unpubl. manus.

The author asserts that the common sense approach of aligning the operations task to the overall business strategy or mission and then making a decision about the structure and infrastructure to support and drive that objective is superior to not establishing these linkages and considering the objective as a necessary evil, a low status backroom activity. The author believes that the key factors why some excellent companies in Australia have achieved substantial improvements in manufacturing-based competitiveness, (and who deserve to be admired), are quality, technology, innovation and human resources, all of which can be brought together to allow the operation to maximise the competitive edge that can be achieved in the marketplace.

Thomson, P. (1988). ***The School of Hard Hnocks: A study of an assessment of experiential learning.*** TAFE National Centre for Research and Development, Adelaide.

This report investigates a much neglected aspect of Australian education and training - the gaining of credit for past experience. Many of the issues raised concern equity for such people as unemployed or retrenched workers seeking retraining and women returning to the workforce. The existing policies in education and training which exclude a consideration of learning that had resulted from past experience are the denial of equity to these groups. The author looks at reasons why Australia has been so reluctant to give credit for previous experience and

recommends the adoption of procedures that should be implemented to change the present situation.

Towards a New Metal and Engineering Industry Award: The report of the DIR, MTFU and MTIA mission to UK, Sweden and West Germany, September 1988. **(1988).** Metal Trades Industry Association of Australia, Sydney.

This Mission sets the ongoing restructuring exercise in Australia in an international context. The Mission examined similar developments in Europe, and in this way, its findings help to define the task and challenge that lies before Australia. The issues raised by the Mission were specifically related to industrial relations in the metal and engineering industry.

Wallace, L., Hayton, G., Guthrie, H. & Brown, A. (1989). ***Articulated Training: Models for the building industry.*** TAFE National Centre for Research and Development, Adelaide.

The aim of this project was to examine the changes needed in the building industry training system as a result of structural changes the industry is undergoing. The main report provides an analysis of existing training and presents a suggested articulated training model for the building industry. The appendix contains an annotated bibliography, building industry case studies and submissions on microfiche. A database of building studies offered in the various States and Territories is offered on microfiche also.

Weisbord, M. (1987). ***Productive Workplaces: Organising and managing for dignity, meaning and community.*** San Francisco, Jossey-Bass.

This book presents a socio-technical systems approach to work organisation and job design. The author states that his approach has been influenced by four major writers in the field: McGregor, Lewin, Taylor and Emery. The book has three major themes; firstly that people are more productive when "community" is established in the workplace; secondly, that there has been a shift away from "problem-solving" toward whole-systems improvements where there is interaction between experts and operatives in making improvements, and finally; discusses the "human side of enterprise", and suggests productivity is associated with human attitudes and behaviour.

Workplace Change, July 1989, (3). Commonwealth Department of Industrial Relations.

Special issue on award restructuring. Articles include: "Coming to grips with change"; "Historic agreement in metal industry"; "Affirmative restructuring"; "The way ahead". The progress in award restructuring is reviewed.